

Changes in leisure physical activity, commuting and television watching in men and women users of the Brazilian National Health System in a middle-sized city: 18-months of follow-up

Mudanças na atividade física de lazer, locomoção e tempo de televisão entre homens e mulheres usuários do Sistema Único de Saúde em uma cidade de médio porte: seguimento de 18 meses

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Abstract – Given the importance of physical activity for health promotion and for the prevention of chronic non-communicable diseases, the Unified Health System (SUS) has changed its strategy of action in the last decades, trying to adopt preventive activities, seeking better quality of life of the Brazilian population and reduce costs with treatment of diseases. The aim of this study was to investigate changes in physical activity and sedentary behavior patterns in users of the Brazilian National Unified Health System during 18 months and the impact of sex and time on such variables. One hundred and ninety-eight participants (58 men and 140 women) were evaluated. Physical activity level was assessed using the Baecke questionnaire. Men had higher scores in all physical activity variables compared to women: walking (p-value= 0.013), cycling (p-value= 0.001) and commuting (p-value= 0.007), but not for TV watching (p-value= 0.362). After 18 months, in the overall sample, walking score increased 25.9% (95%CI= 10.6 to 41.1), but not cycling (1.5% [95%CI= -2.7 to 5.7]), commuting (14.4% [95%CI= -0.4 to 29.3]) and TV watching (1.6% [95%CI= -5.7 to 9.1]). Men were usually more active than women in active behaviors, but not in TV watching. However, differences over time were similar between sexes.

Key words: Chronic disease; Commuting; Epidemiology; Motor activity; Unified health system.

Resumo – Dada a importância da atividade física para promoção da saúde, assim como para a prevenção de doenças crônicas não transmissíveis, o Sistema Único de Saúde (SUS) mudou a estratégia de atuação nas últimas décadas, procurando adotar atividades preventivas, buscando melhorar a qualidade de vida da população brasileira e diminuir gastos com tratamento de doenças. Objetivou-se investigar as mudanças na prática de atividade física e tempo de televisão em usuários do SUS durante um período de 18 meses e o impacto do sexo e tempo nessas variáveis. Foram avaliados 198 participantes (58 homens e 140 mulheres). Nível de atividade física foi mensurado através do questionário de Baecke. Homens apresentaram maiores escores em todas as variáveis de atividade física: caminhada (p-valor 0,013), ciclismo (p-valor 0,001) e locomoção (p-valor 0,007) do que mulheres, mas não para assistir televisão (p-valor= 0,362). Após 18 meses, em toda a amostra, o escore de caminhada aumentou 25,9% (IC95%= 10,6 - 41,1), mas não ciclismo (1,5% [95%CI= -2,7 - 5,7]), locomoção (14,4% [95%CI= -0,4 - 29,3]) e televisão (1,6% [95%CI= -5,7 - 9,1]). Entre usuários do SUS, homens foram usualmente mais ativos que mulheres em comportamentos ativos, mas não ao assistir televisão. Porém, diferenças ao longo do tempo foram similares entre os sexos.

Palavras-chave: Atividade motora; Doença crônica; Epidemiologia; Locomoção; Sistema único de saúde.

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INTRODUCTION

The Unified Health System (SUS) aims to guarantee access to free health services in a comprehensive and universal way to the Brazilian population. Recent data from the Ministry of Health reveal that 71.1% of the Brazilian population uses SUS when in need of medical care, and 47.9% have the Basic Health Units (BHU) as the main source of medical care¹.

Non-communicable chronic diseases (NCD) have become the priority to SUS, becoming one of the major public health challenges of the 21st century, affecting mainly low- and middle-income countries². Combating NCD is important because they are associated with increased risk of early mortality, significant decreased quality of life of the population, and economic losses³. The development of NCD is strongly affected by behavioral variables, among which the practice of physical activities (PA) stands out⁴⁻⁵. Evidence of the positive effects of regular practice of PA on health has been reported for many decades⁵ and there are many scientific findings reporting physical inactivity as a risk factor for developing NCD and premature mortality⁶. In economic terms, within SUS, evidence has shown that regular practice of PA can reduce government costs in primary care⁷⁻⁸ and reduce the risk of early mortality⁹.

However, despite these findings, a significant portion of the population does not reach the minimum recommended PA practice⁹⁻¹⁰. More than that, sex seems to be a major determinant of PA practice¹¹, with studies demonstrating that males are generally more active than females¹¹. In addition to the costs / demand for services differ between men and women¹², the risk of mortality attributed by sedentary lifestyle differs between sexes in SUS⁸.

In this sense, studies identifying temporal dynamics of PA practice between men and women seem important to understand this human behavior¹¹ and, thus, to support the elaboration of more effective actions aiming at its promotion, considering particularities inherent to sex¹². More importantly, the determinants of physical activity practice differ between men and women¹¹, often requiring different approaches. Such dynamics seem relevant within SUS, since they can be used to guide more efficient actions to promote the practice of PA. Thus, the aim of the present study was to identify changes in the practice of PA and sedentary behavior during 18 months of follow-up, as well as to identify the impact of sex on such phenomenon.

METHODOLOGICAL PROCEDURES

Ethical issues

This study was approved by the Research Ethics Committee of the Faculty of Science and Technology of the State University of São Paulo - FCT / UNESP, Campus of Presidente Prudente, SP (protocol No. 241291/2013).

Sample calculation and selection of subjects

The sample consisted of adults aged over 50 years of both sexes, attended by two basic health units (UBS) located at different regions of the city

of Presidente Prudente, SP, Brazil. The UBS involved in the study were indicated by the Department of Health of Presidente Prudente due to the high number of health care services. The city is located in the western portion of the state of São Paulo and has about 208,000 inhabitants and human development index of 0.806 (considered high).

The calculation for the minimum sample size was performed considering a 13.6% reduction in the physical activity score after four years of follow - up among adults attended at SUS in the city of Bauru - SP, a standard deviation of 21.4 in this score and 100% sample losses (due to the longitudinal design)¹³. Additionally, power of 80% and alpha error of 5% ($z = 1.96$) were considered. With the above-described configuration, the equation indicated the need to follow at least 41 adults of each sex ($n = 82$). At the beginning of the study, the inclusion criteria adopted were as follows: i) Record of at least one year in the UBS; ii) Age > 50 years; iii) Have an active registration with the health service, having had at least one medical consultation in the last six months; iv) Signing of the Informed Consent Form.

During a 30-day period, all patients who met the inclusion criteria were invited to participate in the study. The selected patients were invited to attend UBS for evaluation and directed interview. All patients who met the inclusion criteria and wished to participate in the study were followed for 18 months (evaluations every six months, totaling four evaluations). Contact with researchers was maintained every six months. Contact consisted of the participant's visit to UBS, at which time anthropometric measures were collected and questionnaires were applied. The initial sample consisted of 327 patients, but at the end of 18 months of follow-up, the final sample consisted of 198 participants evaluated in all four moments.

Dependent variable: Habitual Physical Activity

By means of an interview, information referring to the habitual practice of physical activities was collected using the questionnaire developed by Baecke et al.¹⁴, whose translation and validation for the Brazilian reality was performed by Florindo et al.¹⁵ (sample composed of men aged 50 years or older, and according to the authors, there were no problems when the instrument was applied to women)¹⁵. The instrument is composed of 16 questions (using likert scale of response) subdivided into three domains of physical activity practice. Occupational (questions 1 to 8): the type of occupation is classified into three intensities (mild, moderate and vigorous), in addition to objective questions such as standing, sitting, carrying weight, walking, feeling tired after a day's work and the perception of PA when compared to people of the same age. Leisure physical exercise (questions 9 to 12): intensity (mild, moderate or intense) and frequency are asked, in addition to perception of PA compared to people of the same age, presence of sweat during PA and practice of non-regular physical exercises. Leisure and commuting (questions 13 to 16): habits of watching television, walking, cycling and active commuting for work and other activities¹⁵ are considered. Questions regarding the field of leisure and commuting were used in this study. Questions refer to behaviors (walking, cycling, watching television

and active commuting [walking or cycling for work, supermarket, etc.]) and the frequency with which such behaviors occur (never [score = 1], rarely [score = 2], sometimes [score = 3], often [score = 4] and always [score = 5]).

Adjustment variables

In addition to sex, the impacts of the Economic Condition (EC) and excess weight as confounding factors were tested. To determine EC, a questionnaire developed by the Brazilian Association of Research Companies¹⁶ was used, which generates a score ranging from A (highest) to E (lowest). In the present study, the score was continuously used. Body mass index (BMI) in kg / m² was calculated using body mass values (Filizola digital scale, maximum 150 kg, model PL150) and height (wood stamometer, maximum 200 cm), according to protocol of Lohman et al.¹⁷, both collected at the time of the interview following standardization.

Statistical analysis

Descriptive statistics were composed of mean values, 95% confidence interval (95% CI) and percentage values. Categorical variables were expressed as percentage values, on which the chi-square test (χ^2) was applied. Differences over time were analyzed by repeated measures analysis of variance, which was adjusted for sex, age, EC and BMI. Statistical analyses were carried out using BioEstat software ([version 5.0], Instituto Mamirauá, Tefé, Amazonas) and in all procedures, the significance level was 5%.

RESULTS

The sample consisted of 198 SUS users, from two UBS. A total of 58 men and 140 women (29.30% and 70.70%, respectively) were evaluated. The mean age of the sample differed between men and women (64.5 ± 9.1 versus 60.4 ± 8.3, respectively, p-value 0.002). BMI values were also different between sexes, with higher values for women (p-value 0.013). Regarding PA, men reported higher PA scores for cycling (p-value 0.001) and commuting (p-value 0.045) (Table 1).

When the walking score was analyzed (Table 2), it was found that there was no significant change over time (p-value 0.338) and that sex did not affect the variable standard (p-value 0.298). On the other hand, men presented higher walking scores compared to women over 18 months (p-value 0.013). Similar pattern was observed for the cycling score, in which there was also no significant change over time (p-value 0.695) and sex did not affect the pattern of the variable over time (p-value 0.466). On the other hand, the effect of sex was more marked (p-value 0.001), manifesting throughout the analyzed period (men with higher scores).

The television score (sedentary behavior indicator) did not change during the follow-up (p-value 0.172), the trajectory was not affected by sex (p-value 0.915) and, in general, scores were similar between sexes (p-value 0.362) (Table 3). Regarding the commuting score, there was a significant difference between men and women, in which men presented higher scores in relation to women

(p -value 0.007), while the same score remained unchanged when the relationship time and time / sex was analyzed during the 18-month follow-up period.

Table 1. Sample characteristics (assessment 1) by sex (n = 198).

Variables	Men (n= 58)	Women (n= 140)	p -value
	Mean (SD)	Mean (SD)	
General data			
Age (years)	64.5 (9.1)	60.4 (8.3)	0.002
Body weight (kg)	77.4 (13.6)	71.2 (14.5)	0.006
Height (cm)	165.3 (7.3)	153.8 (6.6)	0.001
BMI (kg/m ²)	28.2 (4.1)	30.1 (5.7)	0.013
EC (score)	20.4 (4.8)	19.1 (4.7)	0.032
Physical Activity Scores			
Walking	2.2 (1.5)	2.0 (1.4)	0.433
Cycling	1.4 (0.9)	1.0 (0.3)	0.001
Commuting	3.7 (1.6)	3.2 (1.5)	0.045
Sedentary Behavior			
TV watching	3.7 (1.2)	3.4 (1.2)	0.175

SD = standard deviation; BMI = body mass index; EC = economic condition.

Table 2. Modifications of walking and cycling scores during 18 months of follow-up between men and women treated in the Unified Health System primary care (n = 198).

	Assessment-1	6 months	12 months	18 months	*ANOVA repeated measures (p -value)		
	Mean (95% CI)	Mean (95% CI)	Mean (95% CI)	Mean (95% CI)	Time	Sex	Time x Sex
Walking score					0.338	0.013	0.298
Men (n= 58)	2.28 (1.87 – 2.63)	2.44 (2.02 – 2.86)	2.48 (2.08 – 2.88)	2.54 (2.16 – 2.91)			
Women (n= 140)	2.07 (1.82 – 2.32)	2.11 (1.85 – 2.37)	2.05 (1.80 – 2.30)	1.80 (1.56 – 2.03)			
Cycling Score					0.695	0.001	0.446
Men (n= 58)	1.46 (1.29 – 1.64)	1.37 (1.19 – 1.55)	1.31 (1.16 – 1.46)	1.38 (1.22 – 1.54)			
Women (n= 140)	1.07 (0.96 – 1.18)	1.06 (0.95 – 1.17)	1.06 (0.97 – 1.15)	1.05 (0.95 – 1.15)			

ANOVA = analysis of variance; 95% CI = 95% confidence interval; * = model with controlled variance for sex, age, economic condition and body mass index.

Table 3. Modifications of the television use and commuting score over 18 months of follow-up between men and women treated in the Unified Health System primary care (n = 198).

	Assessment-1	6 months	12 months	18 months	*ANOVA repeated measures (p -value)		
	Mean (95% CI)	Mean (95% CI)	Mean (95% CI)	Mean (95% CI)	Time	Sex	Time x Sex
Television score					0.172	0.362	0.915
Men (n= 58)	3.69 (3.34 – 4.04)	3.47 (3.13 – 3.82)	3.31 (2.95 – 3.66)	3.36 (3.02 – 3.70)			
Women (n= 140)	3.48 (3.26 – 3.69)	3.41 (3.19 – 3.62)	3.13 (2.90 – 3.35)	3.22 (3.01 – 3.43)			
Cycling Score					0.761	0.007	0.919
Men (n= 58)	3.77 (3.34 – 4.20)	3.61 (3.20 – 4.02)	3.41 (2.96 – 3.85)	3.10 (2.68 – 3.51)			
Women (n= 140)	3.28 (3.01 – 3.54)	3.23 (2.98 – 3.49)	2.93 (2.66 – 3.20)	2.82 (2.57 – 3.07)			

ANOVA = analysis of variance; 95% CI = 95% confidence interval; * = model with controlled variance for sex, age, economic condition and body mass index.

DISCUSSION

This study aimed to identify changes in the practice of commuting PA and sedentary behavior during 18 months among SUS users, analyzing possible effects of time and sex. As main results, it was found that men presented higher scores in all commuting PA variables (walking, cycling) when compared to women, but for sedentary behavior there was no significant difference between sexes.

In the present sample, men practiced more commuting PA than women. However, the commuting score remained stable throughout the follow-up. Data from VIGITEL analyzed the Brazilian adult population in 2015 and found similar data for the commuting domain, where 11% of men aged 55-64 practiced at least 150 minutes a week of commuting physical activity, while only 8% of women practiced the same amount¹⁸. In our study, in addition to the difference between sexes, a decline in the practice of commuting PA for both sexes during the 18 months of follow-up was also observed, although without statistical significance. Similarly, Mielke et al.¹⁹ observed an accentuated annual decline in the practice of commuting PA in the Brazilian population between 2006 and 2012. One possible explanation for this decline is the increasing use of motor vehicles for transportation and ease of access to these goods, as well as the lack of infrastructure conditions for safe commuting in large cities²⁰.

In the leisure time walking category, it was possible to verify that men had higher scores than women in this domain and the time did not affect this variable, which remained constant during the 18 months of follow-up. Data from VIGITEL show that men are more active in leisure time than women, 45.6% and 30.8%, respectively¹⁸. Recent data have indicated that men are more active than women in the leisure time²¹, but when only walking is analyzed, the results are different from those found in our study, since women are more adept to leisure walking when compared to men²²⁻²³. According to the authors, a possible explanation for such results is that in the elderly population, the practice of leisure time PA is more related to health maintenance than to recreation. In addition, medical recommendations for practicing PA at this age are based on milder and more moderate activities, with walking being the most common²³.

In a similar study, using the same instrument in the Northeastern region of Brazil, analyzing families assisted at SUS, Gomes et al.²⁴ found similar results, where women had higher prevalence of physical inactivity compared to men. Walking has shown to be the active behavior with positive impacts on the users' health and on the primary care costs²⁵. Thus, better understanding of its determinants and behavior over time between men and women is necessary.

The results found in the present study were even more significant when comparing men and women in the cycling domain, where men presented higher scores than women. Perks²² found similar results in Canada, where 27% of men practiced leisure-time cycling against only 20% of women.

Reis et al.²⁶, when analyzing three Brazilian capitals, concluded that men were 3.4 times more likely to use cycling as a means of commuting when compared to women, according to the author, one of the reasons given for low levels of cycling practice in the Brazilian population is the lack of safety and lack of proper places for practice, such as parks and cycle lanes, a factor that influences the practice of female cycling. Such results may explain the high levels of cycling in European cities, where policies to encourage active commuting and leisure time physical activity are greater, as well as the greater availability of places for such activities²³.

The data presented above confirm the consistent differences in the practice of PA between men and women, which are supported by socio-cultural factors, showing that the family nucleus tends to stimulate more boys than girls to be physically active^{11,27}, a phenomenon that seems to manifest even in more advanced ages, assuming that PA is a behavioral variable with characteristics of maintenance throughout life²⁷.

In a recent review, differences were found in the elderly population between sexes when analyzed according to domains, where intense PA, work-related PA, commuting PA, leisure PA and sports found higher scores among men than among women, while PA at home and in the garden, the highest scores were found among women³⁰. These results were attributed to the cultural factor of PA, where older adults continue to perform more traditional PA when separated by sex, and as cohorts grow older, these results may change²⁸.

In recent years, the time spent with television and computers has been used as an indicator of sedentary behavior, and it is a consensus that sedentary behavior is associated with obesity and risk factors for NCD²⁹. Among people attended in SUS, longer time spent watching television increases the risk of all-cause mortality by 44.7%³⁰. When analyzing the difference between sexes and the television time in the SUS population, no statistical difference was found between them. Mielke et al.¹⁹ found that women were more likely to watch more television between years 2006 and 2009, but these differences were not observed from 2010, corroborating in a way our findings. Data from VIGITEL 2015 also verified that there was no significant difference in television time/sedentary behavior between men (22.3%) and women (22%), but found that the older population (+65 years) had higher prevalence of sedentary behavior, with 36.5% of men and 38.2% of women¹⁸. Our findings reflect the longitudinal behavior of such variable among people over 50 years of age, a population that probably already have high scores of such behavior and, therefore, are less likely to increase it.

As the main study limitation, we highlight the use of self-report to evaluate PA practice. Although there are more accurate methods to determine PA levels (and they could improve the quality of information), the costs and time required to conduct large studies using more direct measurement devices would be greater, and the use of the questionnaire seemed more appropriate to this study. Another limiting factor is the fact that the results are presented in the form of scores and not in minutes,

since there is a shortage of studies that have used the same instrument, making comparisons difficult. The absence of values expressed in minutes also makes a more clinical reading of the problem difficult, in which one could identify how many minutes were reduced throughout the follow-up, or even express sex inherent differences in minutes. Likewise, the study could not identify how many minutes would be needed for these subjects to reach the current guidelines for the practice of physical activities.

CONCLUSION

Although men presented higher physical activity scores than women in the different behaviors considered, changes over time in these variables were similar between sexes. In the habit of watching television, there were no significant differences over time, which were also not affected by sex.

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